the sides and tip of its anterior portion. The question, therefore, arises whether the senses of touch and taste reside in the same papillæ, or in distinct ones, which, since so far as we now know, there is no anatomical distinction between nerve tubules of different endowments, it is impossible to decide; there seems no difficulty, however, in conceiving that a single papilla may receive nerve fibres of different endowments, and thus, in the case of the tongue, one and the same papilla may be subservient to the functions both of touch and of taste.

Several interesting cases have been recorded, which prove that the fifth pair of nerves is concerned in the sensation of taste; one by Todd and Bowman, (p. 444,) in which a middle-aged man suffered for eight years from complete loss of sensation in all parts supplied by the fifth nerve on the left side, with the exception of the forehead. The left eye was lost by destructive inflammation; the tongue was quite without feeling on the left side. His sense of taste was found perfectly absent in the anterior and middle part of the affected side; but not impaired behind, in the region supplied by the glosso-pharyngeal nerve. On the opposite side of the tongue his taste was quite acute in front. Two other cases of paralysis of the fifth pair are related by Mr. James Dixon.* In both, common sensation and the function of taste were unimpaired on the sound side of the tongue; but were both entirely lost on the anterior part of the affected side, whilst posteriorly, where the tongue is supplied by the glosso-pharyngeal, its functions were unimpaired.—*Ibid.*

8. *Effects of Alcohol on the exhalation of Carbonic Acid from the Lungs.*—Dr. VIERDONT, in his researches on respiration, finds that immediately after drinking any spirituous liquor, the amount of carbonic acid exhaled becomes sensibly diminished, and that this diminution lasts for about two hours.—*Gaz. Méd*, Oct. 4.

If this be correct, the retention of carbonic acid in the system may explain some of the distressing effects resulting from the use of ardent spirits.

ORGANIC CHEMISTRY.

9. *On the detection of Pus in the Blood and other Animal Fluids.* By J. F. HELLER.—It has hitherto been a matter of considerable difficulty to recognize the existence of pus in the blood; indeed it is still doubted by many whether pus cells do really circulate as such in the blood. Probably this difficulty will account for the discrepant accounts given by writers on the subject, some of whom state that the existence of pus in the blood is indicated by the peculiar aspect and qualities of this fluid, others by its microscopic characters, without, however, the pus cells being actually seen. The quantity of pus in the blood must be enormous; when in a single drop of this fluid, taken from the 20 to 30 pounds existing in the body, we are enabled to detect its existence beneath the microscope. Therefore from such a mode of examination, no certain results can be expected, and no conclusions, *pro* or *con*, can be drawn.

Two cases having occurred to Heller, in which the blood contained a very large quantity of pus, he took advantage of the opportunity, and performed a number of experiments in reference to the detection of pus, and obtained from them some decided results.

He found that if there is only a small quantity of pus contained in the blood, this fluid presents few or even not any peculiarities which can be ascribed to the presence of pus. The more pus there is in the blood, by so much the more is the quantity of fibrin diminished; indeed, if the quantity of pus be very large, the fibrin disappears entirely, so that not a trace of it can be found in blood drawn from a vein by venesection. In such a case there are observed, after death, unusually large deposits of fibrin in the great vessels and in the cavities of the heart. He noticed that when blood containing pus is entirely deprived of fibrin, the blood corpuscles subside sooner than the pus cells, so that these latter form above the blood corpuscles a dirty-white flaky layer. When the quantity of pus in blood drawn from a vein has been large, he has observed the layer of pus cells which has formed above the sediment of blood corpuscles, to be sometimes as much as a line in thickness. Upon examining a portion of such a layer beneath the microscope, there could be no doubt about the presence of pus. When there has been sufficient fibrin remaining to form a clot, he always observed the pus in the uppermost layers of it; but if no real clot formed, then, as above stated, the pus was found in the uppermost layers of the sediment of the blood corpuscles. From these experiments, and from others which he performed by mixing very small portions of pus with large quantities of blood corpuscles, Heller came to the conclusion that the smallest quantity of pus may be detected even in a large quantity of blood. The detection of pus in the blood depends, 1st, on the perfect separation of the pus also from the blood, by mechanical means; 2d, on the microscopic examination of the separated pus cells. All chemical reagents which can be employed for the detection of pus lead to no decided result. The mechanical separation of pus cells from the blood may be detected, by means of distilled water, in the following manner:—The suspected portion of blood is first allowed to coagulate, then the scum is to be removed, and the uppermost layer of the clot to be sliced off with a knife, mixed with distilled water, and then strained through a linen cloth in order to separate the fibrin: to the strained fluid distilled water is to be added, until all the blood corpuscles are dissolved. The whole fluid is then to be left at rest for one more hour in a tall narrow glass cylinder, at the lapse of which time we find a sediment formed, which, (provided all the red corpuscles have been dissolved,) consists of pus cells with chyle corpuscles, (or pale corpuscles of the blood.) The supernatant fluid is now to be drawn off, and the remaining sediment to be washed with distilled water, and then poured into a still narrower glass cylinder, or still better, into a small test-tube, the calibre of which is about one-third of an inch in diameter; this is left at rest until the pus cells have again subsided, and the supernatant water appears quite clear; this clear fluid is then to be poured off, and a drop of the sediment placed beneath the microscope, when the pus cells will distinctly be seen, especially after the addition of acetic acid, whereby their nuclei are rendered more apparent. It is impossible to confound these cells with chyle corpuscles, which never possess nuclei, and are always much smaller than pus cells, which latter Heller states he has constantly found in the blood, of considerable size, and great distinctness.

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* Med. Gaz., July 18; abstract of paper read to the Medico-Chirurg. Society, June 24.

By the above process, Heller states that from a pound of blood pus may be collected to the amount of several drops, and that we may constantly in this way detect with perfect certainty the existence of pus in the blood, or determine its complete absence. If no pus cells are found in the upper strata of the clot, we may experiment with the whole clot in the way above mentioned, namely, by gradually dissolving successive portions of it in water, and then straining through a coarse linen cloth to separate the fibrin. Also, when we have the opportunity, as after venesection, we may free the blood from fibrin by stirring, allow the blood-corpuscles to subside, then gradually add water to the sediment of blood-corpuscles, and continue the process as above directed. Heller states his impression to be, that the presence of pus in the blood cannot be determined in any other way with greater certainty than by the above process, even although it exist in a tolerably large quantity. He promises hereafter to speak of the influence which the presence of pus in the blood exerts on the fibrin, contenting himself at present with observing, that the detection of pus in the blood, which he has been able with certainty to determine, proves unquestionably that pus cells may circulate as such in the blood.

In order to detect pus in urinary sediment, in sputa, and in other animal fluids, the best way is to procure a careful mechanical separation of the pus cells, to collect them into as small a space as possible, and then to examine them beneath the microscope. Thus, for instance, in a case of suspected pus in the urine, the tenacious slimy sediment is to be agitated in distilled water, and the fluid then allowed to remain at rest in a tall narrow glass-cylinder, in order that the pus cells may subside, after which the supernatant fluid is to be drawn off, and a small portion of the sediment examined beneath the microscope. It must be remembered that the water in which the sediment has been washed, as well as the urine itself, or other fluid in which pus is contained, may be albuminous, although perhaps only a trace of albumen may be found; and the greater the quantity of pus present, so much larger will be the amount of albumen: albumen is an ingredient of the liquor puris as well as of the contents of the pus cells.—*London Med. Gaz.*, from *Heller's Archiv. für Chemie und Microscopie, Heft* 4, 1845.

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10. *Chemical and Microscopical examination of several kinds of Sputa.* By SCHERER. *Sputa of Pneumonia.*—Upon mixing portions of pneumonic sputa with water, and filtering the mixture, there was obtained a clear transparent fluid, which became turbid upon boiling; upon the addition of a drop of acetic acid this turbidity became converted into a flocculent precipitate which an excess of the same acid did not completely dissolve. Acetic acid, when added to the cold liquid, also produced turbidity, which did not disappear in an excess of this acid. Alcohol caused turbidity, also a precipitate of white flocculi. It would appear, therefore, that this liquid contained albuminate of soda in solution, together with another soluble substance—most probably mucus. After being allowed to stand at rest for twenty-four hours, this clear filtered fluid became whitish and turbid, depositing a sediment of small white granules.

Upon examining beneath the microscope, the matters which were left on the filter, they were found to be composed of a large quantity of distended mucus corpuscles, containing distinct nuclei; also of many separate nuclei, and of a large quantity of nucleoli, or granules.

As above stated, the watery fluid obtained by filtration became turbid in about twenty-four hours, and deposited a number of small granules; whence it would seem that this formation of granules had been carried on after separation from the organism, and was probably effected by the influence of the oxygen of the air on the albuminous fluid. [Dr. Golding Bird, however, noticed a similar deposit take place in the viscid glairy fluid secreted during the first stage of acute bronchitis, after exposure for a few days to an atmosphere of hydrogen; whence it would appear that oxygen is not essential to its formation. When examined beneath the microscope, the white cream-like precipitate that was formed, appeared to consist of minute round particles, and possessed all the chemical properties of insoluble albumen.*] These granules are insoluble in water and dilute acetic acid, which they were not before oxidation. When once separated in this solid form, they probably act as ferment-globules to the remainder of the fluid, the decomposition of which they speedily induce. The like has been observed in vegetable juices containing albumen, such as the juice of grapes; through the influence of the atmosphere the globules first appear as small solid particles; these gradually increase in quantity, and the fluid becomes turbid from the presence of them. At the same time saccharine fermentation commences, and is most probably produced by the influence of these small corpuscles acting as a ferment. This turbidity invariably takes place in all those fluids in which albumen exists, either alone or in the form of albuminate of soda, and especially where the fluid is much diluted with water; such, for instance, as in blood, urine, &c. This formation of the granules, which takes place in the fluids whilst cold, corresponds to the formation of the fine pellicle, in fluids containing casein or albuminate of soda, on slowly warming them. It seems most probable that in these latter cases this change also results from the action of the atmospheric oxygen, [a view which is confirmed by the fact that the pellicle in the latter case does not form when the fluid (as milk) is exposed to an atmosphere of carbonic acid.—TR.]

Sputa of Broncho-Pneumonia.—Upon examining beneath the microscope the tenacious adhesive sputa (in which were large air-bubbles) of this affection, there were found large quantities of epithelial scales and of mucus corpuscles immersed in an amorphous, gelatinous-looking mucous substance. The mucus corpuscles were dissolved, though not completely, in acetic acid; their cell-walls were thereby rendered thinner and more transparent. The margins of those corpuscles were less contracted than those of pus corpuscles. The mucous substance within which these particles were retained was very abundant; on the addition of

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* Philosophical Magazine, 3d series, Vol. 13.